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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,267	05/25/2006	Hans Rausing	0104-0575PUS1	2577

2292 7590 10/30/2009

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
WALBERG, TERESA J	

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
10/30/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/580,267	RAUSING, HANS	
	Examiner	Art Unit	
	Teresa J. Walberg	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16,18 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 June 2009 has been entered.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-5, 8, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samy et al (2003/0079871) in view of Matsushita (6,926,075) and Derosier (6,889,759).

Samy et al discloses a heat exchanger (Fig. 1) plate (Fig. 6) including a number of turbulence promoting protuberances (27, 28, 29, 30) which project from the plane of the heat exchanger plate (Fig. 9), the protuberances being spaced apart from each other by a substantially flat base portion (24 in Fig. 6) at a bottom of the heat exchanger plate (Fig. 6), the protuberances are symmetrically arranged (Fig. 6),

Samy et al does not disclose each of the protuberances having a surface profile extending over substantially the whole surface of the protuberance for promoting break-up of laminar boundary layers, the surface profile having spherical or ellipsoid segments.

Matsushita discloses a heat exchanger plate including protuberances (3), each of the protuberances having a surface profile ("micro fins", col. 2, lines 54-59) extending over substantially the whole surface of the protuberance for promoting break-up of laminar boundary layers (Fig. 1).

It would have been obvious in view of Matsushita to provide the protuberances of Samy et al with a surface profile extending over substantially the whole surface of the protuberance, the motivation being to increase the turbulence of the flow and thus the heat transfer rate.

Matsushita does not show the surface profile having spherical or ellipsoid segments.

However, Derosier discloses a heat exchanger plate including (Fig. 12a) including a number of turbulence promoting protuberances (32) which project from the plane of the heat exchanger plate (Fig. 12a), the protuberances having a surface profile of spherical or ellipsoid segments (58, 60 in Fig. 12b) for promoting break-up of laminar boundary layers (Figs. 12a and 12b).

It would have been obvious in view of Derosier to provide a surface profile having the shape of spherical or ellipsoid segments for the heat exchanger

protuberances of Samy et al in view of Matsushita, the motivation being to increase the rate of heat transfer.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samy et al (2003/0079871) in view of Matsushita (6,926,075) and Derosier (6,889,759) and further in view of Harrison et al (6,260,830).

Samy et al in view of Matsushita and Derosier disclose a heat exchanger plate having the claimed structure with the exception of the heat exchanger plates being stackable in such a manner the protuberances in a first heat exchanger plate are partially accommodated in the protuberances in a second heat exchanger plate.

Harrison et al discloses arranging heat exchanger plates such that the protuberances in a first heat exchanger plate are partially accommodated in the protuberances in a second heat exchanger plate (see embodiment of Fig. 16).

It would have been obvious to one of ordinary skill in the art in view of Harrison et al to arrange the plates of Samy et al in view of Matsushita and Derosier to partially accommodate the protuberances of a first heat exchanger plate in the protuberances of a second heat exchanger plate, based on the flow pattern desired.

5. Claims 6, 7, 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samy et al (2003/0079871) in view of Matsushita (6,926,075) and Derosier (6,889,759) in view of Dalzell (2,281,754).

Samy et al in view of Matsushita and Derosier disclose a heat exchanger plate having the claimed structure with the exception of the transition between the plate and the protuberances having a radius, the heat exchanger plates being arranged in pairs with the protuberances directed away from each other and in which pairs of plates a gap is arranged between the first and the second plate, the surface profile together with the protuberances forming a golf ball like structure.

Dalzell discloses heat exchanger plates (11) being arranged in pairs (Fig. 9) with the protuberances (25) directed away from each other and in which pairs of plates a gap is arranged between the first and the second plate (Fig. 9), the plates having hemispherical protrusions (12b in Figs. 12 and 13) which have a radius (Fig. 12), the isolated zones of the protuberances being spherical or ellipsoid (Fig. 12), and the isolated zones being spaced from each other by a substantially flat zone (Figs. 12 and 13).

It would have been obvious to one of ordinary skill in the art in view of Dalzell to make the protrusions of Samy et al in view of Matsushita and Derosier in a hemispherical shape having a radius and isolated zones being spaced from each other by a substantially flat zone, and to arrange the plates in pairs with the protuberances directed away from each other, based on the flow pattern desired.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Samy et al (2003/0079871) in view of Matsushita (6,926,075) and Derosier (6,889,759) in view of Harrison et al (6,260,830) and further in view of Lefevre.

Samy et al in view of Matsushita and Derosier in view of Harrison et al disclose a plate heat exchanger having the claimed structure with the exception of protuberances of the first heat exchanger plate being smaller than the protuberances in a second heat exchanger plate.

Lefevre discloses a plate heat exchanger (Fig. 8) including protuberances (19) on a first heat exchanger plate being smaller than the protuberances (18) on a second heat exchanger plate (see Fig. 8).

It would have been obvious to one of ordinary skill in the art in view of Lefevre to use protrusions on the plates of Samy et al in view of Matsushita and Derosier in view of Harrison et al in which the protuberances of a first heat exchanger plate are smaller than the protuberances of a second heat exchanger plate, based on the flow pattern desired.

7. Applicant's arguments with respect to claims 1-14, 16, 18, and 19 have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Teresa J. Walberg/
Primary Examiner, Art Unit 3744

/TW/